Gas Journal

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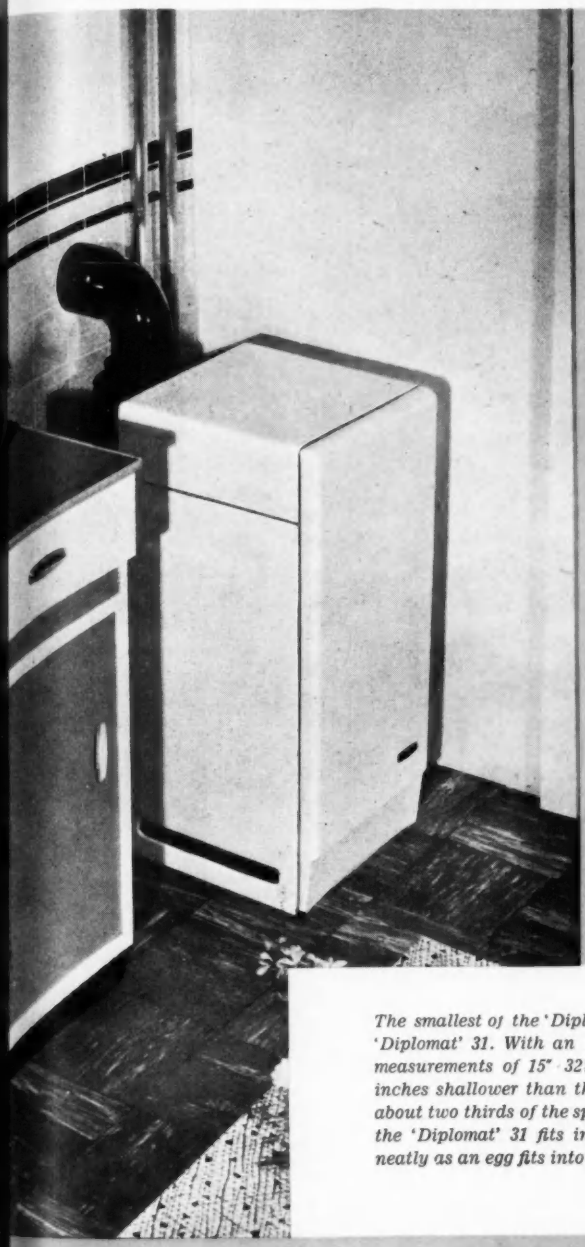

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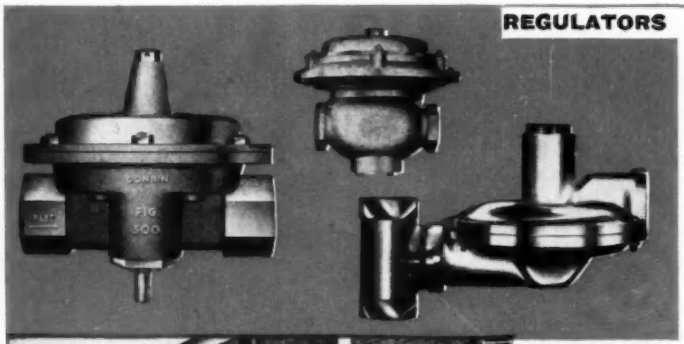

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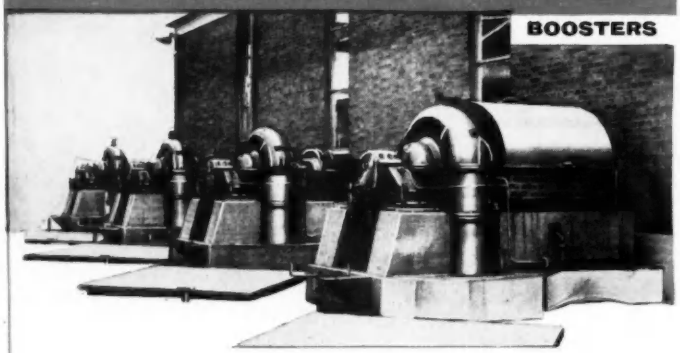

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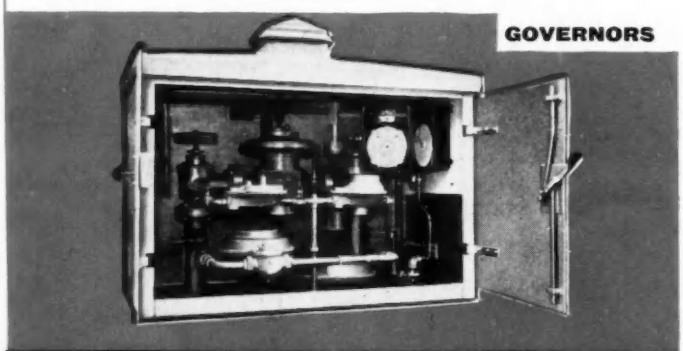

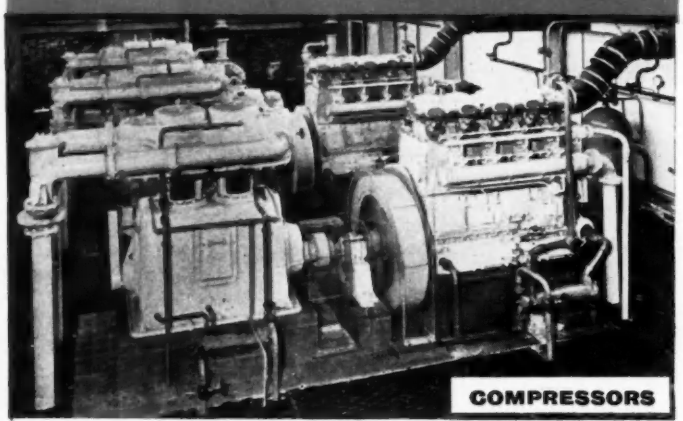

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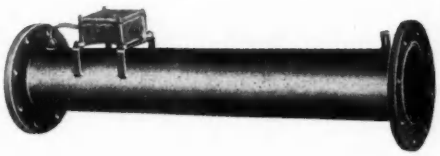

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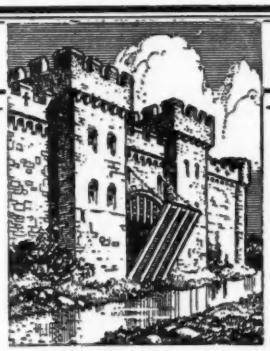

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Gas Journal

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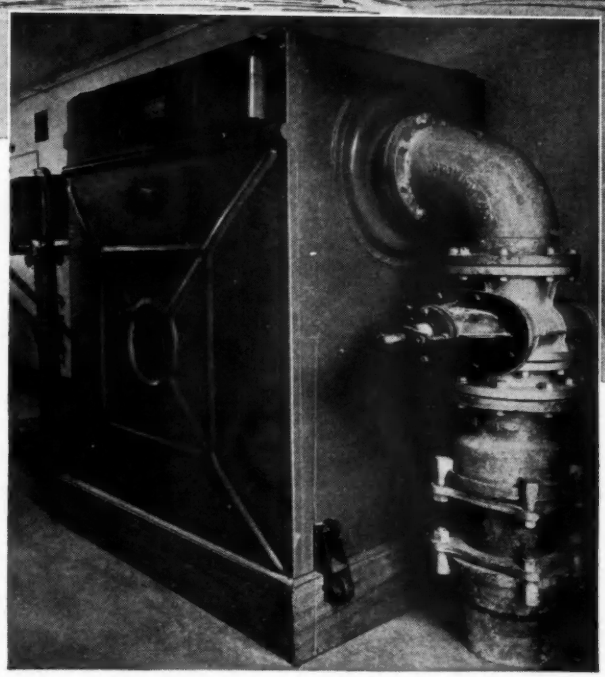

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Gas Journal

COKE OVENS • BY-PRODUCTS • CHEMICALS

Successful pioneering in Wales

THE taking of a gas supply to a remote mining valley in South West Wales is likely to be a hazardous undertaking, not so much because of any technical difficulties of mainlaying or dangers from subsidence after the mains had been laid, but through possible difficulties in selling the gas to the local population. With a supply of electricity already there, it may be thought a waste of time and effort to even consider laying the mains, but with the locally mined anthracite as really the only competitive fuel available, it may be a gamble worth taking.

The Wales Gas Board evidently thought so, when it decided to take a tapping off their grid main and connect the Gwendraeth valleys in Carmarthenshire to a gas supply. The efforts of the Sales and Service Department to sell the gas once it had become available were described in a recent paper by Mr. T. D. Barker, Distribution Superintendent of the Llanelly, Gowerton and Kidwelly undertakings, to the South Western Section of the Wales Gas Sales and Service Association.

The main valley, the Gwendraeth Fawr—the Gwendraeth Fach is soon to become the site of a large reservoir—is about 12 miles long and runs from the coast between Pembrey and Kidwelly in Carmarthenshire to Cumawr and Crosshands in a north easterly direction; it is about a mile and a half wide.

The discovery of anthracite coal in this valley caused the building of a chain of villages, the most important of which from the point of view of Mr. Barker's paper are Trimsaren, Pontyates, Pontyberen and Ponthenry. Trimsaren is near enough to the Kidwelly leg of the West Wales gas grid and Pontyates to a grid main to the west of the valley to make it economic for the respective gas connections to be made.

Potentially, then, there was no difficulty about the supply of gas; it was to hand and with the decision of the local council to build additional housing and schools in the valley, consumers seemed to be at hand too. Technically the supply was excellent, far better than many of the smaller undertakings could have hoped for before nationalisation. Each village was connected by 4-in. spun cast iron district mains tested to 15 p.s.i. through Linkon governors to the main supply.

Town gas, however, was a new commodity for the villagers, and since most of the male population worked in the local collieries, households had concessionary coal of high quality. What was the point of these people spending money on gas appliances and an expensive fuel? There were a few householders, however, who used Calor gas, so there was a small minority of gas-minded people who would certainly welcome being connected to a permanent gas supply and becoming independent of containers.

The Wales Gas Board was able to lay mains to the new housing estates and the schools, but the older houses had to be brought in as opportunity offered. The holding of exhibitions of gas appliances and the running of cooking demonstrations, including inviting prominent TV personalities to demonstrate, played their part. So far domestic consumption seems to be at the rate of 73 therms per annum per household connected and the number of consumers is rising.

Is a project of this sort uncommon in the British gas industry today? We think that it is. Since the war there has been a great expansion in housebuilding, new towns have come into existence and in almost every case a gas supply has been included as one of the 'services.' Generally it has been an urban development, an expansion of some prosperous community or an extension of the suburbs. In Mr. Barker's paper we almost feel we are being taken back to the pioneering days of the industry when the local community would be canvassed for their support to take gas from the new works to be sponsored by the local tradesmen or even the squire. The chief difference at Gwendraeth, however, was that there was an excellent supply ready to be tapped, modern gas appliances were available and the valuable experience of the Wales Gas Board could be called upon.

We were, however, also interested in Mr. Barker's passing reference to the conversion of Calor gas cookers to burn town gas. He does not say how many such conversions were carried out, but we feel that the presence of such cookers on this virgin ground was most important. We understand that the Wales Gas Board to some extent sponsors the distribution of Calor gas. Does it do so to ensure that as many people as possible

will become gas minded, or is it a very long term 'softening up' process by which it hopes to be able to count on a number of potential gas consumers in some rural district within reach of its grid main, which it hopes to develop?

It is difficult to decide, but we think that, since the Board buys such a very great proportion of its gas from outside sources, it may even consider the distribution of l.p.g. as a logical extension of this policy.

One further point of interest in Mr. Barker's paper was the adverse propaganda against which the Board had to fight. It was about the time of the successful voyages of the Methane Pioneer and the local provincial Press of the Principality was stressing the possible effect of the importation of liquefied methane on coal production and local unemployment.

The type of coal mined in the Gwendraeth valley is of no possible interest to the gas industry, but clearly the preponderance of coal gas and coke oven gas distributed by the Wales Gas Board was a useful factor in being able to press home the advantages of a 'home produced' refined fuel.

Sales message with a military manner

WE sometimes wonder why the authors of papers on commercial subjects so often bend over backwards in an attempt to write them with a novel twist. Perhaps the answer lies in the fact that their basic message is always the same—only the presentation is different. During the last year or two there has been a marked increase in sales papers among the District Sections and Junior Associations. That is all to the good, but unless the authors can find something new to say to their predominantly engineering audiences they will soon outwear their welcome. Cumbersome 'novel' twists will not hide the fact that there is all too often remarkably little original thought on the subject.

We have been taking a second look at a paper presented to the Eastern Section in June, a paper by Mr. A. R. Turner, the Commercial Officer for the Cambridge Division of the Eastern Gas Board. Here is a paper which exhibits something of the fault we mentioned above—the mixture pretty much as before but dressed up with a rather dusty gimmick. And yet because there is a great deal of truth in it, and because the extreme importance of its sales story cannot be denied, we have chosen it as the subject of our editorial comment this week.

Entitled 'Operation-"Selling",' the paper was apparently written under the influence of the author's nostalgia for the Army Staff College at Camberley, for it applies military methods to the problem of selling more gas, and does so with such a heavy burden of military expressions that at times the attack seems in danger of grinding to a dead halt. However, Mr. Turner wins through the hazards of his own making.

Appropriately, the subject is tackled from the viewpoint of a district manager, by which is meant the officer in charge of sales and service at a district whatever the size, and the author confines himself to the domestic sales problem. His object is 'to increase the domestic gas sales in our district and the average sales per domestic consumer, at the same time improving our contribution to the Board's revenues.'

Mr. Turner has a good deal to say about that rather overworked phrase, the 'image of gas.' How can the public's impression of our fuel be improved? Mr. Turner suggests that the district manager might have an all-out purge of really old appliances; see that all those appliances on public view are creating a good impression; make certain that all employees who contact the public realise how important this whole matter is; see that the showroom is clean and tidy and that the appliances are looking their best; see that sales staff have the necessary knowledge to give adequate advice and assistance; see that the emergency arrangements work so that the public can always contact someone who can take the necessary action after hours; and pursue all complaints thoroughly. Seven sound maxims to follow.

Central heating looms large in our thoughts these days and 'General' Turner, as Mr. G. E. Thomas called him, devotes part of his paper to the subject. He points out that the public are suspicious of running costs and maintains that 'we will have to reassure them by confidently stating the estimated costs.' On this point Mr. Thomas, who is area industrial gas officer, recommended caution—wisely, we believe—when he contributed to the discussion. 'Such a practice can be very misleading and in certain circumstances result in unfortunate repercussions,' he said. 'The difficulty is to quote reliable figures without the danger of under- or over-representing our case. Running costs for identical size boilers can and do vary over pretty wide limits, and it has been acknowledged there is no easy formula for assessment in individual cases. I have had dealings with many hundreds of these installations over many years and have found it more reliable and rewarding to quote to interested customers actual consumptions specifying the maximum, minimum and average consumptions experienced with the identical size of boiler in which they are interested.'

However, Mr. Turner is certainly right in principle and he is equally right when he senses a 'distinct timidity' on the part of some sales staff when dealing with running costs; that must be overcome. Another point we endorse is his insistence on the importance of giving central heating consumers the best possible attention and service: 'There is no doubt that our competitors are weak on this point, and a little extra care on our part, even to the extent of monthly visits to see that customers are keeping within their budget, will pay good dividends.' All the same, monthly visits cost a lot of money. Finally on this particular topic, we agree 'that nothing confirms the management's faith in an appliance in the eyes of the sales staff so much as seeing a good stock to back them up.' We know of one board which often has to fall back on the boiler stock held by a builders' merchant in its area, but that board is not Mr. Turner's!

BOOK REVIEWS

Public relations in public utilities

'Public Relations in the Public Utility Services.' By Dr. Hans Grupe. 46 pp. DM. 12.25 (approx. £1 1s.).

IN the introductory chapter to this book the term 'public relations,' which has been adopted in its English form, is defined as distinct from 'human relations in industry,' which are confined to relations within the undertaking, and as distinct from 'sales promotion,' which confines its appeal to actual and potential customers. Electricity and gas supply undertakings have grown into large groups and usually enjoy a monopoly within their areas. Both facts may induce in their consumers a negative or an antagonistic attitude.

In the main part of the report, which is a detailed study of public relations work, the reasons for the scanty enlightenment of public opinion are analysed, *i.e.*, the intricate nature of the production processes for electricity and gas, prejudices regarding explosive and poisonous properties of gas and the large scale of the undertakings with its associated ideas of capitalism.

The complex structure of electricity and gas tariffs cause subconscious reactions in the mind of many consumers. Public relations officers in their aim of bridging this gap have to direct their efforts towards the following groups:—Their own workmen and staff, their consumers, their shareholders, the local government authorities and publicity circles.

Public relations must be based on detailed knowledge of public opinion, acquired (a) by personal interviews through skilled interrogators, or (b) by questionnaires sent through the post, or (c) by telephone.

Two interesting examples of the first method are described, *i.e.*, the case of the Edison Gas and Electric Co. in Milan, and that of the Swiss Federation of Electricity Undertakings. As staff and workmen are also consumers, their enlightenment should always be the first step. Means available for this purpose include house journals, leaflets, circulars, works news letters, prize competitions, annual reports, training courses for officials in contact with the public and lectures for senior officials.

Evaluation of the results of public opinion polls will give suggestions for better relations. An efficient complaints department should be attached to the Consumers' Advisory Bureau. Exhibitions are a valuable aid for establishing personal contacts, the showing of instructive films and the education of school children. Works visits also help to promote better understanding.

Stockholder relations, community relations and press relations are dealt with in the light of American experience. The last chapter summarises the programme for the work of a public relations department in a gas or electricity undertaking and gives useful suggestions for every branch of its activities.

The effects of new gas-making processes

'The Effects of New Gas-making Processes with regard to the Effects on Coking Operations.' By D. Wagener. 180 pp. 72 illustrations. 20 tables. DM. 43 (approx. £3 15s.).

THE book is one of a series of research reports sponsored by the Ministry for Economic and Transport Affairs of North Rhine-Westphalia. It is divided into three parts. The first part contains a review of the consumption in the Federal German Republic of the various sources of energy (coal, lignite, oil, water power). In the second part the author describes all known gas-making processes, based on publications in the technical literature, and compares their merits from the point of view of helping to overcome the expected shortage of coke oven and town gas supplies in future years. The third part contains as a separate annex all calculations, the bibliography, all illustrations and most of the tables.

The first part takes the year 1950 as a starting point for all sections. With the exception of a few sections which include the year 1961, the year 1960 is the last year for which any forecasts are made. The main weakness of this first part appears to be that the statistical part was concluded in 1954, and that no attempt has been made to correct any production or consumption figures for the following years. The coke oven gas requirements for all purposes, which amounted to 272,870 mill. cu.ft. in 1950, are estimated to rise to 501,260 mill. cu.ft. by 1960. The town gas requirements are expected to rise from 107,280 mill. cu.ft. in 1950 to 197,680 mill. cu.ft. in 1960. An estimate of the coke requirements in 1960 and of the total amount of coke oven gas produced shows how much of the latter is available for firing the ovens and how much low B.t.u.-gas has to be produced by other processes. The latter is calculated as equivalent to 55.6 bill. B.t.u. for the year 1961.

The second part of the report deals with all processes known for the gasification of solid fuel for which the author suggests a new decimal classification of four digits. The first digit indicates whether the temperature of the process is above or below the melting point of the ash and whether the pressure is atmospheric or above atmospheric. The second digit indicates the grain size of the solid fuel, *i.e.*, lumps, fines or dust, the third digit shows whether air, or steam, or air and steam, or oxygen and steam is used for gasification. The fourth digit signifies either the use of direct heating, heat transfer by solid, liquid or gaseous substances, or finally heating from the outside.

The three books reviewed here belong to a series of university and institute research reports sponsored by the Ministry of Economic and Transport Affairs of North Rhine-Wesphalia. All are published by Westdeutscher Verlag, Cologne and Opladen.

The first group of processes comprises the gas producers with revolving grates, the Winkler producers, the Flesch-Demag producers, the Panindco producers, the tapping type of producers, the vortex producers, the pulsation tube producers and the molten slag producers. All these processes, which are described in detail, are for the production of low B.t.u.-gas. The processes for the gasification of coal dust are thought to offer most promise.

The second group concerns the production of water gas and comprises the following processes:

The Koppers-Schwarzheide, the Pintsch-Hillebrand, the Didier-Bubag, water gas generators with a revolving grate, the I.C.I., the Fuel Research Board's producer, the Winkler, the Flesch-Demag, the Schmalfeld, the Koppers-Totzek, the Panindco, the Thyssen-Glaocsy, the Leuna-tapping-type producers, molten slag producers, the Morgantown, the Dupont, the Texaco and the Morgantown pressure type producers.

Here, too, increased attention is being paid to the gasification of fines and coal dust and also to processes in which oxygen and steam are used as gasifying media.

The third group of gasification processes for the production of high B.t.u. gas comprises only the two Lurgi processes, *i.e.*, the Lurgi pressure gasifier process and the Lurgi-Ruhrgas process for coal dust.

After this systematic description of the known processes, which is mostly based on flow diagrams or sectional drawings of the producers, the author investigates which of these processes would be able to supply the extra quantities of gas required at the most economical price. The processes for the production of low B.t.u. gas are judged on a comparative basis by the ratio of their costs for fuel and for gasifying media such as air, steam, etc., to the difference between the equivalent price on a B.t.u. basis minus the extra expenditure for the erection of compound coke oven batteries. From this point of view the vortex producers and the molten slag producers (Rummel) are stated to offer most promise.

For water gas production, the molten slag producers again appear to have the best prospects, especially if the water gas is to be methanised. A low-shaft type of furnace would also result in very low costs per cu.ft. of water gas made because the high value of the pig-iron produced as a by-product more than offsets the costs for oxygen and the higher fuel costs. Hydrogenation of water gas would be preferable to methanisation from the point of view of cost where the water gas is made under pressure with the help of steam only.

The Lurgi pressure gasifiers and the Flesch-Demag process are believed to be the most suitable. In the appendix are to be found the derivation of all formulæ used to calculate the efficiencies and the costs of the various processes, a bibliography of 59 publications, most of them German or American, all illustrations and tables Nos. 8 to 20. All calculations make due allowance where necessary for the savings accruing from the production of by-products such as pig-iron, tar or petrol.

The blow-off pressure of gaseous fuels

'Investigations Concerning the Blow-off Pressure of Gaseous Fuels.' By Hans-Joachim Koch. 29 pp. 16 illustrations. DM. 10.65 (approx. 18s. 6d.).

THIS book describes the theory of the stability limits of gas flames, with particular reference to the blow-off phenomenon, and the practical experiments which were carried out in the Institute for Gas Heating at Essen with a specially designed test apparatus in which carbon monoxide, methane, propane, butane and their mixtures with air were investigated.

The flashback and blow-off conditions of a gas burner flame are explained in detail, mainly on the basis of the theory evolved by B. Lewis and G. v. Elbe. In American scientific publications on this subject the critical flow limit gradient is used as a criterion for flame stability. If its values are plotted as a function of the stoichiometric fraction, the conditions for blow-off, stability and flashback can be clearly defined. These stability diagrams are, however, of little use where the flow conditions are turbulent and the jet size is smaller than the quenching distance, which is defined as the distance from the inner edge of the jet to the outer edge of the cone, measured horizontally.

The Institute for Gas Heating at Essen has therefore carried out tests with small jet sizes of .03 in., .04 in., .05 in., .06 in., and .2 in. diameter. Readings were taken of the blow-off pressure, measured at a distance of 12 times the jet diameter from the jet orifice, also of the gas temperature, its density, its lower calorific value and its composition. The highest blow-off pressure with carbon monoxide and carbon monoxide/air mixture occurred with the smallest jet size and with pure CO. Increasing admixture of air and increasing jet size reduced the blow-off pressure. As the latter depends on where and how the pressure reading is taken, the author has also calculated the blow-off velocity, defined as the rate of flow when blow-off commences.

The value of the blow-off velocity is, of course, independent of the conditions under which the pressure is measured. The blow-off velocity is referred to normal temperature and pressure conditions. Its values are represented as a family of straight lines, if plotted against the percentage of carbon monoxide in the mixture. The larger jet sizes resulted in higher blow-off velocities in this type of graph.

The results of the methane tests were similar but gave considerably higher values for the blow-off velocity. The results of the propane tests differed from these as the blow-off velocities rose for all jet sizes as the gas percentage rose up to 70% propane and dropped again beyond that point. Above 42% propane the smaller jet sizes had a higher blow-off velocity. Butane and butane/air mixtures gave results which were similar to propane but less consistent.

The practical conclusions which can be drawn from these tests are valuable for the conversion of gas appliances to gas with lower blow-off pressure characteristics. In such cases the whole jet orifice can be subdivided into a larger number of smaller orifices. Each of these will pass a certain rate of flow, the value of which can be read from the graphs. Alternatively, the jet size can be increased provided the rate of flow remains below the value of blow-off velocity, which can also be read from the graphs.

Blow-off is sometimes prevented by arranging a cluster of small jets around the main jet. These pilot jets cause the temperature of the gas stream to rise, and with it its ignition velocity. Although the gas velocity is also increased, the rate of increase of the ignition velocity as a function of the temperature rise exceeds the rate of increase of gas velocity so that more stable flame conditions are achieved by these means. The results of these investigations should be of value also for the design of burners for domestic appliances which are to be operated with propane or butane.

A general view of the gas plant. Dung is dumped into the concrete basin in the left foreground, rinsed with water and then pumped into the digester under the asbestos roof. This asbestos roof is to protect the large flat slab of the digester roof itself. The engine room is behind the two gas holders. The wires carry electricity to the farm buildings.

PIGS PRODUCE POWER

South African installation described by L. J. FRY

A HEADLINE once given to a description of this system of generating methane gas from animal manure was 'the smell powers his farm.' It is almost exactly true, since by anaerobic decomposition of the dung from pigs, it is possible to produce gas which runs a converted diesel engine 24 hours a day. This engine runs an alternator and supplies power requirements for the farm and three houses, free of all fuel costs. There is no fertilising value lost in the decomposed dung—in fact it is vastly improved—so one might even say that the smell alone has been used.

From an experimental start with a few drums in 1957, this gas system is now being built into large farming layouts as a power centre, and the sludge used as a source of fertiliser.

Pure dung is dumped in a concrete basin, where it is slopped with water. Drainage from the piggery could also be used to advantage, and any animal or fowl dung is suitable. It then enters a container, known as a digester, where it is devoured by methane bacteria. The large size of this digester ensures that the bacterial state is maintained, the contents being always alkaline. The temperature at which this mass can be kept determines the length of time of de-gasifying the original dung.

The whole mass is displaced by each daily addition, and moves down through the digester until withdrawn at the other end. Gas is released from the surface and generates considerable pressure in doing so. This is led off to a gasholder to form a reserve supply of gas, and, at the same time, to provide an overflow pressure release mechanism to the digester.

The volatile solids content of the dung is reduced in the process to about one-quarter of the original. The residue is a soupy black fluid, almost odourless apart from a smell of ammonia, fly-free, and very easy to spread from a simple watering cart or into a furrow.

An analysis of the sludge shows that it contains 10% dry matter, of which 6.4% is nitrogen, 5% phosphates and 1% potash. To quote Professor Gotaas, of the World Health Organisation at Geneva on this subject, 'the total effect on the soil is far better than the sum of the constituents.' The even coverage and the mechanical rapidity of application with which this system of fertilisation can be practised appeals particularly to the mechanised farmer. There is no better fertiliser than the natural one, and here it is in full strength, neither leached nor bleached as it is in composting.

The fields of lucerne on the farm have never looked better. The sludge and the seasonal showers have brought out massed mushrooms throughout the fields in marked contrast to the dark green foliage. Mushroom culture from sludge may be a possibility—but one not yet investigated.

There are, however, some snags to this system. Anaerobic decomposition generates no heat of its own. Heat must be applied, and this can be done simply, without any running costs. An engine, preferably running at a high compression ratio, such as a diesel engine, should be installed near the digester. A small pump circulates the cooling water of the engine through pipes to the core of the digester. Up to 50% of the gas generated must be used to run this engine in cold climates, and the waste

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GAS JOURNAL August 10, 1960

From a paper to a joint meeting of the Scottish Western and East of Scotland Junior Gas Associations, Glasgow, March 5.

Problems beyond the works gates

By T. C. BATTERSBY, M.B.E., M.I.Mech.E., M.Inst.Gas E.,

CONTROLLER OF THE WATFORD AND TOTTENHAM DIVISIONS OF THE EASTERN GAS BOARD.

TODAY we look forward to the production of gas at strategic centres by the high pressure gasification of low grade coals and oil, from a variety of oil feed stocks, by catalytic and non-catalytic processes, the drainage of methane from mine workings and the importation of liquid methane. It is possible that we may see concurrently the development of extensive underground storage in geological formations linked with a national gas grid and the end of our peak demand anxieties.

It is fascinating to speculate on the future of gas if all these projects materialise, but we must keep our feet on the ground. If our industry is to hold its position in the face of the keen competition we shall meet in the immediate years ahead, we must examine our traditional practices up to the point of consumption and whatever the future holds it will be time well spent.

During the last decade there has been a steady improvement in production efficiency. The smaller works, and, generally speaking, the less efficient ones, have been closed down, gas manufacture has been concentrated in the larger and more economic units and the interlinking of works has made it possible to operate more plant under optimum load conditions, but the servicing of the capital expended to effect these changes and to replace worn out plant has left a heavy burden. Except in so far as increased demand will lower overhead charges, unless the cost of raw material falls we cannot anticipate any appreciable reduction in the costs of gas production by traditional processes. We must, therefore, look beyond the works for economies and for the means of reducing or at least stabilising the price of gas.

Need for specialist selling force

If we are to expand the use of gas we must have experienced technical staff constantly in touch with architects, builders and industrialists. The most skilled advertising and well timed publicity are, in themselves, not enough; technical representation by trained specialists is an essential complement.

The strength of the selling force can only be determined by local circumstances. While the numbers employed must be related to the potentialities of the district other factors such as the rate of development have to be taken into consideration. In some districts domestic service representatives are as low as one per 8,000 consumers while in others as high as one per 4,000 consumers. Even this latter concentration is insufficient without employing staff on 'evening calls' when the prospective tenants of new dwellings have to be contacted in their London accommodation or when we have to engage in the scramble for new consumers on the periodic 'letting days.' But by confining our efforts to the selling of traditional domestic equipment we will not arrest the trend in the serious fall in gas consumption per domestic consumer.

Opportunities in house heating

We must reach out for the new loads and for this we need staff with particular technical skills. The industry must have a specialised sales force capable of exploiting the wonderful opportunity of expanding the space heating load which our competitors are presenting to us. By national advertising campaigns, backed by strong technical representation they are conditioning the public for whole house heating and for a constant supply of hot water on tap. Most architects and builders regard these amenities as selling features and there is ample evidence that householders are turning from solid fuel appliances to labour saving equipment and consider any money spent to this end is soundly invested. I believe that in future it will be as difficult to dispose of a medium sized house without central heating as it is today to sell a house without a garage or the space for one. Most gas boards offer tariffs for whole house heating and for space and water heating. At the present time we may not have a commodity price advantage, but price should not be adjudged the sole criterion. We have the appliances and a fuel that is second to none for convenience and cleanliness and our competitors cannot claim every favourable advantage or selling feature. Today we need more technically trained men to present the case for gas. The Institution has responded to this need and, as you all know, is affording young people the opportunity to qualify in the field of 'utilisation.'

Two recent gas installations providing complete domestic heat services in Harlow New Town may be of interest. This business was secured by technical representation as distinct from the art of selling gas appliances. Discussions commenced when the projects were at the design stage since Se-Ducts had to be incorporated in the structure and the architect had to satisfy himself that by their inclusion his design was not prescribed. We in turn had to satisfy the architect and the developing authority that the capital expenditure incurred would not raise the rents beyond the resources of the prospective tenants and it was equally important that the weekly running costs should fall within similar limits.

This is the type of business which will arrest the downward trend of consumption per domestic consumer. In a recent article in a technical journal a contributor implied that area boards are too dominated by the production problems of the industry, and since no attempt was made in the annual reports of the area boards to explain the decline in sales per domestic consumer, inferred that this

subject is not receiving the attention it merits. I would not presume to reply for the area boards, but I think the author was writing with his tongue in his cheek.

We all know the many reasons that can be advanced to explain the position: The change in social habits, more efficient gas cookers, the increasing competition from oil and electric heaters and, in the smaller houses, the almost universal policy of providing only one flue per house which serves a solid fuel fire with a back boiler for hot water. But we have been slow in convincing our own staffs that gas is not limited to the potential cooker and sink heater load, gas ignition for the solid fuel fire and refrigeration and that a carefully controlled convector gas fire compares favourably with coal for space heating. It is against this background that we have to wage our campaigns to raise the consumption per consumer, and first we must enthuse our own staffs.

While we must make every effort to encourage the use of gas in new development, it is equally important that we do not neglect the older houses where it is apparent that our competitors are making some inroads; business, like friendship, must be maintained in a state of constant repair.

We cannot be complacent about the cooking load. The Board of Trade figures show that production of electric cookers is moving perceptibly towards parity with gas cookers, though it would appear that there was a check in 1959 when gas cooker production stepped up, and I think it would be fair to deduce that sales were up as everyone is very conscious of the financial burden of stock piling. Unfortunately the table includes appliances produced for export, but the trend is clear in a field where years ago we thought gas was unassailable. We can hold our position only by a sustained effort in the field of publicity and by virile representation.

In all new towns the Board has opened one large showroom in the main shopping centre, except in Harlow, where there are two, one with a floor area of 1,250 sq.ft., the other of 680 sq.ft. In addition to the established premises it is considered necessary to have travelling showrooms which can be temporarily located in the neighbourhoods as they are developed.

I do not think it can be disputed that consumption trends in new development will establish the future pattern of our business, and I expect it is your concern in Scotland, as it is of the Eastern Gas Board, that we should convince the young home builders that gas is the fuel of the future and to see that gas consumers are not lost when they move to new accommodation. But when development reaches the proportions experienced in the Home Counties it presents an enormous burden to maintain contact with architects, builders and tenants.

Population drift into London

For several years prior to the outbreak of war there had been a steady drift of the population into London and the immediate neighbourhood, and in 1942 the L.C.C. set up a committee under Sir Patrick Abercombie to consider the problem of rehousing and siting industry in the Greater London area. This plan for the decanting of some 1¼ mill. of the London population was broadly accepted by the adjacent county authorities concerned, and with slight modifications it was agreed to proceed with the building of eight towns, and five became the direct concern of the Eastern Gas Board: Hatfield, Welwyn Garden City; Hemel Hempstead; Stevenage and Harlow.

The County of Hertford in the inter-censual period 1931-1951 had a population increase of 52.4%. The greater part of the county was within the statutory limits of the former Watford and St. Albans Gas Company, and with the exception of Harlow all the new towns have fallen within the area served by the Watford Division. No part of Great Britain has expanded its population at such a rate. From the early 1920's until 1939 the former Watford and St. Albans Gas Company enjoyed a steadily expanding gas demand (at an average rate of some 3.7% per annum), so we were attuned to the atmosphere of expansion.

In this part of the area during the war years aeroplane manufacture predominated, but under normal conditions a wide range of employment is offered in food processing, printing, glass manufacture, wireless and television manufacture, and sundry other light industries.

Initial plans proved optimistic

Since each new town was intended to be a complete community with a population balanced to meet the requirements of planned industrial development we had to estimate the share of the heat load we could expect to achieve.

During the war years the demand for gas by domestic credit and prepayment consumers rose rapidly, mainly due to the reception of evacuees and the short supply of coal. Moreover, owing to building restrictions many houses accommodated more than one family, and it was realised that the consumption per dwelling would fall as soon as more normal conditions were established.

With what has since proved to be undue optimism we decided to plan for a load of 150 therms per domestic consumer, a consumption nearly as high as had been achieved under abnormal conditions. It was not thought, however, to be unattainable since we were led to believe that everyone would demand a higher standard of living after the war. This, we considered, would mean more hot water in the home, a refrigerator and some space heating by a fuel on tap in addition to the cooking load, which was regarded as almost sacrosanct.

The new towns were planned for populations varying from 25,000 to 50,000 in Hatfield and Welwyn to 60,000 in Stevenage and Hemel Hempstead and 80,000 in Harlow. The number of dwellings to be erected was resolved for us by the new town authorities who worked on the basis of 3.1 to 3.5 persons per dwelling, but it is now considered that the figure will ultimately rise to 3.9 persons, and it is hoped that this greater density will raise the consumption per consumer.

It was much more difficult to forecast the number of gas consumers we might reasonably hope to win in this new world outlook. It was clearly foreseen that much would depend upon the attitude of the developing authorities; would the tenants be given freedom of choice or would some arbitrary ratio between gas and electricity be determined, as had been our experience on some local authority estates? After representing the case for gas the authorities decided that the tenants should have freedom of choice, and a gas supply has been laid to every house built in all new towns and L.C.C. estates within the area of the Eastern Gas Board. The extent of the carcassing has varied, always a cooker point is provided and a point taken to the living room fireplace. In the first houses on the L.C.C. estates a gas or electric panel fire in one bedroom was provided as a house fitting and for a while in Hatfield and Welwyn Garden City gas refrigerators were installed by the developing authority, but latterly, throughout the whole of the development, points only are provided for gas and electric appliances and the burden of getting apparatus installed has rested with the respective utilities.

While 90% might utilise the gas point provided for the ignition of a solid fuel fire, we had yet to estimate the number of consumers who might be expected to use up to 150 therms per annum. We actually had very little to guide us. Probably more than 85% of the householders

in the established towns cooked by gas, but so far as space heating and hot water requirements might arise we had no indication of where the public's choice would lie. Eventually we planned to meet a domestic demand based on the assumption that 75% would cook by gas, that the cooker and the wash boiler would be the backbone of our domestic load of 150 therms, and when the tenants had met the initial cost of setting up new homes we hoped they could be induced to install refrigerators and use gas as an alternative to the back boiler for summer water heating.

Industrial demand in new towns

Having somewhat arbitrarily determined the possible domestic demand the next duty was to assess the non-domestic potentialities—the industrial and commercial usage. Since the new towns were to have self-contained communities with employment safeguarded by a wide diversity of industry, we were naturally influenced by the demands of Letchworth Garden City and Welwyn Garden City on which these new towns were to be patterned. In Welwyn Garden City the non-domestic load amounted to approximately 67% of the total consumption while in Letchworth it was about 47%.

In the former we considered we had never had equality of opportunity in the domestic sphere, but in the latter town we felt there was a pattern for the future. Since it was intended that the new towns should attract a similar diversity of light industry, we examined the demands of the established industrial areas and reached the conclusion that we might expect a load of some 10,000 to 11,000 therms per acre per annum, and as commercial establishments were to be designed to match the requirements of the community we planned to meet a total non-domestic consumption equivalent to the domestic demand.

The anticipated industrial demand has not so far been achieved in every new town. One is far in excess, two are within the target area, but one, Stevenage, is disappointing for reasons quite outside the Board's control. Here a considerable acreage of the industrial area is occupied by two factories and neither requires heat for process work. It is interesting, however, that the total industrial consumption in the five new towns amounts to an average of 12,200 therms per acre developed.

May we for a moment look at some of the practical problems of customer service. I know that in Scotland a considerable amount of work study has been undertaken, and Mr. Beavis gave a most interesting account to the Institution in 1958 of what had been achieved in Edinburgh.

In recent years continuous attention has been directed to reducing operating costs of the Sales and Service Department and at the same time improving the standard of customer service.

In 1955 the Watford Division was divided into 12 districts, each with its own office, stores and local management. The average number of customers served per district was 15,000. Units of this size were found to be uneconomic, and centralisation was effected by creating five service centres as shown in Table 1.

No further reduction in the number of service centres is planned in view of the rural nature of the greater part of the divisional area, in which considerable distances separate one community from another.

The original method of delivering appliances and materials to and from the customers' premises was by means of 1 to 2-ton vans each manned by a driver and vanguard. Delivery usually was made in advance of the fitter's call, and collection of disconnected appliances on a subsequent day. In addition the movement of vices and other ancillary equipment from job to job was by means of 5-cwt. vans driven by single-handed fitters.

The effect of the planned centralisation without modification of the transport system probably would have caused an increase in transport costs and a deterioration in customer service. At about this time I purchased a new television set and was impressed by the service the agent gave. A new aeriel was fitted, a new machine delivered and the old one taken away, all in one visit. Why not a service equal to this by the Gas Board? On this basis our system was evolved. Study work has been directed to securing an organisation which makes the best use of transport and which aims to impress the customer that the service is quick and economic and one that provides the minimum of inconvenience.

TABLE 1.

Service Centre	Number of customers	Area of District (Sq. miles)
Hemel Hempstead ..	26,000	97
Hitchin	29,000	247
Luton	48,000	174
St. Albans	51,000	125
Watford	45,000	45
Total	199,000	688
Average per Service Centre ..	39,800	138

The organisation selected is one that has been styled the Gasfitter-Chargehand-Driver system, and was installed experimentally at the St. Albans service centre in 1958 and later at the Watford centre in 1959. As the title suggests, the main elements in the system are especially selected first class fitters who have been trained as drivers and given the status of chargehand. Each chargehand is given the responsibility for limited supervision of 2 to 3 installation fitters and, with himself doing the equivalent of a day's fitting work, forms a team to provide an installation service to 6,000 customers in the urban parts of the district and approximately 4,000 in the rural.

Each chargehand is provided with a 10/12-cwt. van and he transports to the customer's premises all appliances, meters, pipe, fittings and tackle required by the team. He also brings away disconnected appliances and materials for return to the service centre.

Comprehensive service by chargehands

The van is equipped as a small mobile store, complete with mounted vice, a bin for an imprest stock of fittings, and roof storage for the carrying of pipe and ladder. Sufficient floor space is available for transporting the equivalent of four medium size cookers.

As a general rule the chargehand undertakes all the installation jobs estimated to take less than four hours work, the longer jobs being carried out by the other fitters in the team. These other fitters receive a complete delivery service from the chargehand and generally maintain a working day on customers' premises from 8.00 a.m. to 5.00 p.m. These fitters travel from job to job by bicycle, carrying a bag containing the lighter tools. The chargehand maintains a close liaison with the progress section at the service centre and hands work to the other fitters in the team at least 24 hours in advance of the commencement of the job.

In rural districts, owing to the distances involved, the chargehand will also carry out appliance servicing work and emergency calls. The team's customer content is accordingly reduced in these areas to approximately 4,000.

Each team of fitters is assisted by sufficient boy mates to carry out work which justifiably can be claimed as double-handed. The ratio of fitters to mates is 2:1. The allocation of mates to fitters is made by the chargehand, who may himself borrow the services of a mate for the whole or part of a day to assist in the loading and unloading of appliances, and in actual fitting work.

The following advantages are claimed for the new system:—

1. A comprehensive fixing service by chargehands. Unnecessary calls at a customer's premises are eliminated by the chargehand delivering a new appliance, fixing it and bringing away the disconnected appliance, *all in one call.* The chargehand is able to complete in one call a wide range of jobs where there is uncertainty concerning the material required. This enables more jobs to be accepted without the need of a call by a representative to ascertain the materials required, including jobs for which there is a standard charge.

2. A longer productive day and better service to other installation fitters. The existence of the mobile stores both in the chargehand and foreman vehicles provides an on-the-job service to installation fitters, thus ensuring that jobs can be started with the right material and equipment and completed with the minimum of delay in spite of errors in material specification and issue. The elimination of stores time at a depot for all installation fitters other than a chargehand, makes practicable an 8.00 a.m. to 5.00 p.m. working day.

3. Greater flexibility. The system ensures that 25% of fitters have the use of a van, thus providing greater flexibility in operation, particularly in the treatment of emergency work.

Greater mobility of fitters essential

4. Reduced cost. Compared with the original method even with centralisation it has been possible to reduce the costs of transport, which includes drivers and vanguards, by approximately 48%. This saving is possible because the chargehand carries out a day's fitting work at least equivalent to that which in the past was done by a cycling fitter when engaged on the same type of work. The time spent on delivery and collection and serving other fitters therefore can be discounted in the comparison for the St. Albans district.

5. Improved morale. The system has brought advantage to the selected fitter who has been promoted to a chargehand. He has obtained improved status and more pay. He has gained the use of a van and been provided with the means of doing work effectively without the frustration that can be created by the lack of materials and equipment. His morale is high and as the vital link in the chain of customer service, has set a high level of productivity to the remainder of the fitting staff. The newly created status of chargehand has made available a new avenue of promotion for the younger qualified fitters, which should enable the Board to retain their services in the face of competition from other industries.

6. A satisfied customer. The system establishes the principle of one job, one call, whenever practicable. It cannot fail to impress the customer with its simple, direct and economical approach.

The present clerical organisation responsible for customer service is based on the provision of one clerk for approximately 6,000 customers, covering the activities normally of one chargehand. He progresses the work from receipt of order to completion of job and maintains close liaison with foreman, chargehand and customer.

Detailed study work is about to be undertaken to establish the best and most economical clerical organisation for the efficient planning of the Gasfitter-Chargehand-Driver system.

Appliance servicing and emergency work in urban districts is under review at the present time, but it is already apparent that greater mobility of the fitters, particularly on the outskirts of the urban areas, and improved communication between fitter and the service centre are necessary ingredients of an improved and more economical service.

It has been clearly established as a result of extensive trial that the scheme is both practicable and efficient. There is no doubt however that it can be further developed and study work will continue to achieve this purpose. In addition, it is felt that there is a sounder basis for the introduction of an incentive scheme should this prove to be a practical proposition.

Combined fitting and collecting

With a view to reducing operating costs in the accountancy department a fitter/collector system has been in operation in the Watford Division since 1956.

A qualified gas fitter, who is also trained to collect monies and give rebates, is provided with a 5-cwt. van. His duties comprise:

1. The exchange of faulty prepayment meters. He takes the new meter, disconnects the old one, refixes the new one and brings away the faulty meter. He empties the old meter, computes rebate and gives receipt to consumer.
2. Clears *in situ* faults in prepayment meters, *e.g.*, coins caught.
3. Takes special readings of credit meters, caps off and prepares accounts and where possible, collects monies.
4. Disconnects appliances for consumers leaving and collects relative disconnection charges.
5. Follows up expired final notices and collects accounts or cuts off meters.
6. Checks disputed meter readings.

By this system, complaints by consumers that several calls are made by both gas fitters and collectors have been obviated. Transport and labour costs have been affected. Each fitter/collector covers some 25,000 consumers, and on an average deals with 16 calls per day. A saving of £500 per annum per fitter/collector is being made by comparison with the former method employed where several calls had to be made by both gas fitter and collector.

The system was originally devised as an accountancy service and has satisfactorily served this purpose However, since the Fitter-Chargehand system was introduced and progress sections were established it would appear that there is a case for embracing more customer maintenance work with the duties and for controlling the work through a progress clerk. This will shortly be the subject of work study.

We have been recently allocated a V.H.F. radio channel for base and mobile transmitters, and this will be the subject of experiment in the St. Albans district.

DISCUSSION

Mr. D. R. Adams, Edinburgh, opening the discussion, raised questions on several points, including cost to consumers for mains and services, and consumer reaction to reduction in the number of consumer service centres within the Watford Division, and asked Mr. Battersby to comment on what appeared to be the very short travelling time on the account of a daily timetable of one of his chargehand/gasfitters.

Mr. A. Smith, Edinburgh, commented on Mr. Battersby's use of the term 'meter rents,' an expression which was very much 'taboo' in Scotland.

Mr. G. B. Scott, Glasgow, followed with questions on the methods of enthusing sales staff within the Watford Division, the use of retailer dealers, and the use of contractors for fitting appliances. He commented favourably on his experience of R/T systems, and stated that he felt sure the Watford Division would benefit from this service.

Mr. D. Beavis, Edinburgh, commended the experiment with the mobile chargehand/gasfitter, but asked him if any steps were being taken to find out how long jobs should take. He supported Mr. Scott's views on R/T systems.

Mr. J. A. Ferguson, Glasgow, questioned Mr. Battersby on methods used within his division for the progressing and costing of jobs, and **Mr. Ray,** Dundee, asked what system was operating for servicing houses where consumers had freedom of choice.

Mr. E. G. Smith, Glasgow, touched briefly on subjects of consumption per consumer, and the whole house-heating potential, the problems of limited canvassing in Glasgow for sales to new housing, and loss of workmen's time through 'no entry' during certain hours of the day.

Mr. J. Renton, Edinburgh, referred to the use of armoured tubing to fit a cooker, and commented that it would appear from Mr. Battersby's paper that a considerable use was being made of M.I. tubing rather than light copper.

Mr. A. Higgs, Glasgow, questioned Mr. Battersby on tariff structures. In the industrial field, he stated, it would appear that the gas industry in the Watford Division was getting a fair share of the market, and asked for information on the number of industrial consumers visited by each representative. He commended Mr. Battersby's experiment with mobile fitter chargehands.

Mr. R. D. Bruce, Glasgow, who had been associated with Mr. Battersby before coming to Scotland, was able to draw a comparison between certain conditions found in Glasgow and the Watford Division. He showed interest in the figures quoted for costs of heat service to new flats in Hatfield, which gave encouragement of favourable results in the 96 multi-storey flats at Nitshill, Glasgow.

Mr. A. M. Jackson, Dumbarton, stating that 'foundations of profits are made in the retort house,' commended the efforts obviously being made in Mr. Battersby's division to ensure the utmost efficiency 'beyond the works gates.'

Mr. Battersby, in a summing up, said that the purpose of his address was to focus attention on the need for more technically qualified men on the utilisation side of the industry, and the many interesting problems which arise in improving service to the consumer.

PIGS PRODUCE POWER

From p. 197

heat from the engine is sufficient to maintain the digester at a suitable temperature, and so complete the cycle.

Power is always in demand on a farm. The engine can supply power to an alternator more cheaply than mains electricity or even atomic power. Alternatively, the gas can be used as it is generated; there are a stove, a refrigerator, gas lights and irons in use on the farm. The methane so produced is of higher calorific value than town gas and is not dangerous as in mines, since it has a distinct smell which can be easily detected long before the proportions of an explosive mixture are reached.

A converted slow speed diesel engine has been running on gas straight from the digesters for over 18 months. This particular fuel is very clean, wear on the engine is negligible and the sparking plug only requires 'tapping in' once a month. The gas can also be compressed for use in mobile vehicles and will be used eventually in tractors, trucks and cars, but the necessary four-stage compressors and the storage cylinders are expensive.

A pre-fabricated plant capable of taking three tons of dung daily, *i.e.*, from 3,000 pigs, 400 head of cattle, or 40,000 fowls, would give £3,000 worth of gas a year. Some labour is needed to build the plant, but most of the work can be done by any handyman conversant with a spirit level, and a small team will be required for the rough concrete work. Smaller plants than this are perfectly feasible, even as small as domestic sized plants which would take a few wheelbarrows of dung daily, and be able to provide hot water, and lighting and power to spare, but the need to heat the ferments would make such plants impracticable except in hot climates. The smallest possible plant that would be successful in cold climates, would consume not less than half a ton of dung daily, and would drive a small converted diesel engine to provide most of the power for the household and the farm, while the waste heat from the engine would provide the heating for the ferments.

It should be noted that this particular system works on an entirely different principle from the French and Italian type of plant. It requires only a fraction of the labour. and will work in any climate, however cold.

A great deal of thought, planning and design went into the full-scale plant, built in 1958. Nevertheless, experience gained since then has proved that other, cheaper, materials could have been used and would have been more efficient. Early in 1960 the correct sealing materials were used, and have enabled all available gas to be trapped. There are now 700 pigs on the farm, and their output of dung is three quarters of a ton daily, but about 20% of the available dung is lost in drains which do not lead to the digester. The daily output of gas is 9,000 cu.ft. with a calorific value of 585 B.t.u. per cu.ft.—the farm being at 5,500 ft. above sea level (24.5 in. of mercury) and not at sea level where the gas would have a calorific value of 711 B.t.u. per cu.ft. The daily thermal output is, therefore, 5,264,000 B.t.u. (about 52 therms). Taking diesel fuel at 163,000 B.t.u. per gal., the equivalent quantity which would be needed would be 32 gal. At 2s. 3d. a gal.—the prevailing price in South Africa—its cash value would be equivalent to £3 12s. a day, or £1,314 a year. If the potential power can be fully utilised, the full significance of these values can be realised by consuming the gas in a diesel engine converted by magneto to run on gas, or as a dual fuel engine with the gas drawn in through the air intake. There is therefore an immense potential power available from humble dung, far greater than the heat available from burning dried droppings, and yet preserving it as a fertiliser. So much interest is being taken in this particular source of power that plants for poultry, cattle and pig farmers in South Africa are being designed to suit individual requirements.

Nature's own way, adapted to man's use, has enabled an engine and alternator to be successfully run to provide power for pumping water from boreholes, irrigation sprays, infra-red lamps in all breeding sties, a lucerne drier, flood lights, electric drills, battery chargers, an air compressor and a hammer-mill from the droppings of the pigs. All this potential power would otherwise have been wasted so it can, I consider, be justifiably looked upon as 'free' and as such is a sound economic proposition.

Experiments are continually being conducted to improve on the uses of gas, to fight against corrosion, to design labour-saving layouts, and particularly to make full use of the residue as a fertiliser.

SOME TRADERS UNFAIR

Council proposes a cash allowance for buyers of wet coke

IT is grossly unfair of some traders to expect consumers to pay for excessive moisture in coke as if it were coke. This is stated by the Domestic Coal Consumers' Council in their joint Annual Report with the Industrial Coal Consumers' Council published last week.

The Council says that moisture content was the aspect of coke quality that gave rise to most complaints and that there had been several references to the subject in the Press.

While the Council is, 'well aware that it is at present impracticable for all coke to be stored and transported under cover from rain and snow,' it states that more thought should be given to finding a means of doing this. In the meantime, the Council suggests that buyers of wet coke be given a cash allowance by the merchant.

Sharp practice by minority

Sharp practice on the part of a minority of coal merchants is also criticised in the report. The council is satisfied that the greater part of the trade is doing its best to provide good service at reasonable prices. But, the report goes on, merchants' freedom since decontrol to fix their own prices and the designation under which they retail coal might in some cases have been abused and a minority of consumers might not be getting a fair deal.

The decline in consumption of house coal, particularly in London and the South, is noted in the Domestic Council's report and it is pointed out that rising standards of living and the spread of smoke control areas is likely to accelerate this trend.

'The Guardian,' in a leader commenting on the report, agreed that it was not practical to cover all coke but said, 'It is not impracticable for coke merchants to weigh the moisture content in samples from their yards and to add enough real coke to make up an honest ton of dry fuel when they supply it.'

The 'Daily Express' commented that the Council had implanted in the public mind the picture of a sizeable amount of roguery by coal merchants, 'and this picture is utterly unfair.'

A letter to the 'Financial Times' of August 8 by a Radcliffe, Lancs, Borough Councillor says that the cost of covering railway wagons (2s. 8d. per ton) and depots (4s. to 5s. a ton) is small compared with the price of coke and the fact that the consumer would be getting 8-10% more burnable fuel. To ask merchants to make an allowance for excessive moisture, the Councillor says, is to admit that the public are being overcharged and, he adds, 'for the Gas Council to leave the matter there is just not good enough.'

NEWS SUPPLEMENT

20 want manager's job

MR. JOHN SIMPSON, Town Clerk, told last week's meeting of Ballymena (Co. Antrim) Borough Council that twenty applications had been received for the post of manager of the Council's gas undertaking, vacant due to the resignation of Mr. C. W. Surman owing to ill health.

Commencing salary for the post is £1,100, plus free house, gas and coal.

Second stage of Durgapur works completed

THE Indian Steelworks Construction Co. Ltd. has completed the second stage of the four-stage steelworks at Durgapur, West Bengal, India.

Incorporated in this second stage is the second coke oven battery and the benzole rectification plant. The total coal input of the works will be 8,700 tons per day, handled by three wagon hoists and tipplers. The plant's operating capacity will be 550 tons per hour. The coal will come from the 100,000 ton capacity stockyard, after passing through a coal-washing unit able to handle 360 tons per hour.

The throughput of dry, clean coal to the ovens will be 5,200 tons per day, producing 3,900 tons of coke per day. There are three coke oven batteries with 234 ovens, each of which has a coal charge of 18 tons.

1960 EISTEDDFOD KITCHENS USE GAS

Mr. T. Mervyn Jones, Chairman, Wales Gas Board visiting the kitchens at the Eisteddfod, Cardiff, with Mr. Dolbear, Catering Manager of William Hancock & Company, the official caterers. Gas equipment supplied by the Board was used for cooking, water heating, steaming and refrigeration.

Scottish Gas Board approves projects costing £129,279

CONSULTATIVE COUNCIL GETS DETAILS

FOUR-FIGURE projects totalling £129,279 approved by the Scottish Gas Board during the three previous months were reported at a meeting of the Scottish Gas Consultative Council held in Edinburgh on July 27. The district totals were: Edinburgh and South-East, £10,160; Central, £40,095; Aberdeen and North, £32,096; Glasgow and West, £25,979; South-West, £20,949.

Biggest item in the Central District list was £20,000 additional expenditure on repairs, etc., to the carburetted water gas plants at Dundee gasworks. This is in addition to £20,000 already authorised for this project. The partial resheeting of the crown of No. 3 gasholder at Dundee will cost £5,445.

Also in the Central District, £10,940 is being allocated for mains and services to 410 houses at the Letham, Perth, housing estate, and there is an item of £3,710 for 920 yards of 8-in. main and governor and meter equipment to provide a supply of gas to the Gourdie factory of Astral Equipment Ltd.

The bulk of the Glasgow and West total is taken up by the provision of mains and services, but there is an item of £4,010 for the installation of a heat recovery system on the ammoniacal liquor line from the concentrated ammoniacal liquor plant at the Provan chemical works.

In Aberdeen and North District, a sum of £18,985 is being allocated for the reconstruction of 'B' and 'C' settings of continuous vertical retorts at Inverness, and £9,888 at Aberdeen for an extension of the existing medium-pressure system.

A new station governor house, complete with station governors, safety governors and fan booster installation, is to be built at Inchgreen gas works, Greenock, in the South-West District area, at a cost of £8,500.

The Edinburgh and South-East District figure of £10,160 is accounted for by the resetting of six 50-in. major-axis continuous vertical retorts at Galashiels.

KIDS REPLY TO GAS ADVERTS

'COULD you please explain how a brain works?' This was a question sent in by a six-year old in response to one of the Gas Council's current series of advertisements in the *Children's Newspaper*.

Each week young readers are invited to submit questions about gas. The Council's aim is to teach the next generation to appreciate the variety and scope of the gas industry's activities. The best three or four questions and answers are published, the senders receiving book tokens.

100 questions a week

Over the first six weeks of the campaign questions have averaged 100 a week, the age of the senders ranging from six up to 14 or 15 years.

Apart from the more popular questions —how is gas made? who invented gas cooking? and so on, some ingenious queries are submitted. Here are a few:—

Why does gas burn with a blue flame?

How much gas would be needed per minute to give the same heat as the sun?

Why is gas inflammable?

How does gas come along the pipes?

If latent heat is hidden, how do you know it is there?

How much water does coal gas contain and how does it get there?

How does gas make moth balls?

Flyover House for Wimpey

TO house the growing number of staff dealing with the design and procurement of chemical plants and oil refineries for countries throughout the world, George Wimpey and Company Ltd. on August 5, acquired Flyover House, the new 12-storey office block at the point where the Great West Road approaches the Chiswick Flyover.

Initially, a staff of 550 will occupy the greater part of the new building which marks London's gateway from the West.

At home, mechanical, electrical and instrument engineering contracts are being undertaken for various large oil and chemical companies for sites at Carrington, Grangemouth, and the Isle of Grain. In many of these contracts the Wimpey Organisation is also responsible for construction.

GAS BAN LIFTED

TENANTS of old people's flats and bungalows in the area of Chesterfield Rural District Council are to be provided with a gas supply and to be given a choice between gas and electric appliances, following the withdrawal of the Council's ban on the provision of gas in old people's residences.

The ban was imposed some years ago after a fatality in one of the old people's bungalows, and it has been withdrawn following the inspection of safety devices incorporated in the new cookers designed for the old or handicapped.

Conference will aid industry's coal selection

A CONFERENCE will be held by the Combustion Engineering Association at Harrogate, on November 8 and 9 to assist industrial management and plant engineers in choosing the best coal and plant for their particular requirements.

The conference will examine, from both the technical and the economic aspects, the choice of coal allied to the selection, operation and maintenance of equipment for boiler plants and industrial furnaces and kilns, in order to achieve the maximum savings in capital and operating costs.

Three further sessions

After an introduction by Dr. C. M. Cawley, C.B.E., Chief Scientist, Ministry of Power, and an address by a member of the National Coal Board Marketing Department, three further sessions will discuss the practical and economic problems involved in operating and maintaining the plant; choosing new plant or extensions to existing plant; and new developments.

Schenectady goods to be made in U.K.

A JOINTLY owned company has been formed by Schenectady Varnish Co. Inc. of Schenectady, New York, and The Midland Tar Distillers Ltd., of Oldbury, Birmingham, to manufacture and distribute Schenectady products in the United Kingdom.

Formed in 1906, Schenectady Varnish Co. Inc. manufacture industrial resins and coatings for rubber compounds, rubber-based adhesives, emulsion floor polishes, brake linings, laminated papers, reinforced plastics, paints, varnishes and enamels.

The Midland Tar Distillers intend to extend their range by manufacturing chemical derivatives as a by-product of tar distillation. The Four Ashes Refinery, developed over the last ten years, will house the plant.

Before the new company is in production, Schenectady resins will be supplied from stocks held at Four Ashes.

New smokeless fuel

THE Spenborough works of the North Eastern Gas Board are to start production shortly on a new smokeless fuel which will be given the trade name of Cleanglow.

The advantage of the new fuel, according to a N.E.G.B. official, is that it will burn more like coal without giving off the same amount of smoke and will not need a gas poker to light as with present coke. Prices will be a little dearer than coke.

Spenborough works would be entirely devoted to producing the new fuel and will cease production of gas coke.

Children can get on television at Olympia gas stand

A CHANCE for youngsters to win prizes and to be televised while they cook a tasty dish or toss a pancake will be given on the Gas Council's Stand at the Boys and Girls Exhibition which opens at Olympia on August 16.

The first thing to catch the eye on this stand will be lifesize figures of some of the favourite characters out of 'Eagle,' 'Girl,' 'Swift,' and 'Robin.' Then there are cooking demonstrations the youngsters can watch and take part in.

In the demonstration theatre, which will seat 120, a closed-circuit television has been installed. The stage is a fully-equipped kitchen, and two television cameras, one at each side of the stage will cover the cooking demonstrations. All the fun of the cooking efforts of those members of the audience who take part can be viewed on the sets installed in the audience section.

Boys and girls compete

To encourage a competitive spirit, boys and girls taking part will be able to compete with each other for small prizes.

There will also be special shows by Carol and Chris of 'Girl.' Their adventures, mishaps and successes in learning to cook, will be brought to life before the audience, who will be able to enjoy their efforts to produce such dishes as cheeseburgers and fruit sponge flan.

Youngsters will have a chance to enter the national Master and Miss Therm competition for the best all-round teenager. The first prize will be Premium Bonds to the value of £100.

PLANT FOR JAPAN

P.G. ENGINEERING LTD., of Stockton-on-Tees, have received a contract from Tokai Ryuan K.K.K., of Japan, for the design and engineering of process plant to treat ammonia synthesis gas.

The plant is designed to deal with about ½ mill. cu.ft. of synthesis gas per hour, and consists of a P.G. high-pressure carbon monoxide conversion unit, using P.G. manufactured catalyst specially developed by the company for high pressure use, followed by hydrogen sulphide and carbon dioxide removal in a two-stage plant employing the Vetrocoke process.

GAS FIRES THIS STEAM ROLLER

THE steam roller owned and used by the Guiseley, Yorks, Town Council is to be brought into line with the Clean Air Act regulations by the use of gas to light the machine's fire. An added advantage of gas-firing is that it will reduce the time for getting up steam. Aireborough Council has authorised the spending of £60 for laying a new service gas pipe at the Highways Department yard.

WORLD'S BIGGEST GAS LIGHT

New gas advertisement for Minneapolis

MINNEAPOLIS Gas Company's massive No. 2 holder, long a landmark in northwest Minneapolis, U.S.A., is now sharing honours with a new company landmark—the biggest gas light in the world. When the three-mill. cu.ft. four-lift holder is removed next year, the company's giant lamp will hold the spotlight alone.

The 28-ft. high light with a 1,300 pound, 78-mantle burner head is next to a Company billboard which stands in front of the 50-year-old holder. It has been named the Aquatennial Gas Light in honour of the Minneapolis Aquatennial, the city's famous summer festival.

Queen dedicates light

The light was dedicated by Queen of the Lakes, Gail Nygaard. Wearing her tiara and clad in a white evening gown, Queen Gail ascended the platform of a hoist and was lifted to the gas light's 10-ft. high burner head.

At the wave of Miss Nygaard's wand, the Aquatennial Gas Light leaped to its full, dazzling 13,000 candlepower brightness—and officially joined the gas sales promotion roster.

Idea for the big light was born early in 1960. It was decided that the linear measurement would be 8¼ times the size of a popular model of outdoor gas light. The final product was a burner head 10 ft. 9⅛ in. high. Volume measurement is more than 600 times that of the conventional outdoor lamp.

The biggest gas lamp in the world, at Minneapolis, U.S.A., is lit by Queen of the Lakes, Gail Nygaard.

Attached to the standard stainless steel pipe are 78 pieces of stainless steel tubing, bent down at right angles to hold Coleman mantles. There are six tiers of seven mantles and six tiers of six. The post of the light is a 25-ft. length of 12-in. main, 7 ft. of which are anchored in a ton of concrete.

Gas is fed to the light through ¾-in. copper tubing which is secured to the post by clamps. It operates on 4 p.s.i. Gas consumption of the giant light is 148 cu.ft. per hour, approximately equal to the input of two residential heating plants.

The Aquatennial gas light is still considered somewhat in the experimental stage. It has not yet been subjected to an onslaught of the elements and after a year's observation of performance some changes may be necessary.

Cost of materials for the Aquatennial Gas Light was less than $1,300, including $563 for the stainless steel mantle tower, $296 for the glass and $271 for the metal parts of the burner head.

Rising costs of new mains cause concern

MR. J. A. DERBYSHIRE, manager of Bangor (Co. Down) gas undertaking told a meeting of the Borough Council that unless a high proportion of tenants in new housing estates use gas the cost of supplying gas mains to those estates will have to be borne by existing consumers.

It was essential, he said, that the staff of the undertaking should be able to contact potential consumers at an early stage in the development of a new estate.

Mr. Derbyshire also drew attention to the proposal loans scheme operated by the Scottish Midland Guarantee Trust Ltd. This scheme, which offered personal loans at attractive rates of interest, was used by the Gas Council as a means of furthering sales of central heating appliances.

It was agreed that the manager obtain further details of the Trust's services.

C 19th gasworks philosophy must go

CORRESPONDENCE

DEAR SIR,

The threat of a breakdown due to the shortage of production men within the West Midlands Gas Board, reported in the July 27 issue of the 'GAS JOURNAL,' is not only disturbing but uncovers a situation which is extremely serious.

The Chairman has most certainly brought home to the public the seriousness of the position with a vengeance. His own consumers and others are already rushing pell mell for oil and electrical appliances; no remark could be better calculated to guarantee a further loss of domestic and industrial business to the industry.

The Chairman continued by stating: 'It may be that Government policy on the economic side will result in us getting these men.' This indeed may well be so, in so far that Government policy could result in unemployment, whereby the highly-paid workers in the locality may be compelled to accept employment with inferior conditions and wages within the Gas Board, but for how long?

This remark cannot be construed by anyone, especially by the much-needed men, as being an exactly constructive solution, or even a tactful one in the light of present day national conditions and tempers.

Alderman Lewis' statement, referring to gas fitters being snapped up by toolrooms in local engineering industries, presumably because of their excellent training and their subsequent high qualities, is frustrating but understandable.

The Chairman's solution to this problem suggests that apprentices should not in future receive such a high standard of training, in order, I presume, to render them completely unattractive to other and competing industries.

This solution reminds me of the time I spent in China, where it was the custom of husbands in a central province to facially disfigure their pretty wives, so as to make them unattractive to other males. Even this I understand was quite abortive! And so would be the retrograde steps which Mr. Diamond suggests in face of his own problems.

The hour is already late, and the situation critical for the industry in more senses than one, but there may still be time for a great resurgence during the second half of the twentieth century.

The old Victorian carrot of absolute security but coupled with depressed salaries and wages has been dangled too long; the last ten years have surely shown us there obviously is no security, and this fact must be clearly faced.

Nineteenth century gasworks philosophy and thinking must go, men and women of the highest calibre, statur and leadership are needed at the to people of ideas and ability throughou the ranks, workmen of intelligence an of the highest possible training must b obtained in the field. This, coupled wit superior and advanced standards in con ditions, salaries and wages comparable t the best which private enterprise ca offer, this Sir, and this alone, we must strive for or else we perish—quickly.

E. H. PRITCHARD,

145, The Gateway,
Dover,
Kent.

August 3, 1960.

PERSONAL NOTES

MR. J. SIMPSON has been appointed Deputy Group Chairman of Woodall-Duckham Construction Co., Ltd., with overall responsibility for the growing number of subsidiary companies. MR. E. N. WENBORN has been appointed Vice Chairman particularly concerned with the company as a contracting unit. MR. C. D. MUNTZ has been appointed a Joint Managing Director. MR. A. F. COTTRELL, MR. H. E. DYBLE and MR. R. O. RICHARDS have joined the board from the staff as Directors-in-Charge of the operating department, construction department, and design and development department respectively.

With Thermax clay-bonded siliceous bricks, vertical retorts can be built and operated free from joint leakages. Thus, additional fuel economies are possible. A bold claim, but justified by hard facts. Thermax retort bricks have a far higher bulk density than any other clay-bonded siliceous retort material of similar composition. This, plus much reduced porosity and permeability, has been achieved by a combination of special composition, grading control and pressing techniques. Accurate control of density is carefully maintained during manufacture. All this adds up to better vertical retorts with far less slag erosion and flaking. Let us send you the full technical story of Thermax bricks.
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